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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,443	11/07/2001	J. Craig Raese	10011455-1	4173

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EXAMINER	
GIESY, ADAM	

ART UNIT	PAPER NUMBER
2656	

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,443	RAESE, J. CRAIG	
	Examiner	Art Unit	
	Adam R. Giesy	2656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13 and 14* is/are allowed.

6)☒ Claim(s) *1-12 and 15-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's argument on page 9 of the Response asserting common assignee of the applicant's invention and Naberhuis is convincing to remove the 103 rejection. The following substitute Office Action is made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-8, 10-12, 15-17, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (hereinafter Gibson – US Pat. No. 5,557,596) in view of Pfeiffer (hereinafter Pfeiffer '305 - US Pat. No. 4,423,305).

Regarding claim 1, Gibson discloses an electron storage device including an electron emitting device, the device comprising: a storage medium having a storage area (see Figure 1, elements 106 and 108), a structural state of the storage area being alterable by a beam of electrons emitted by the electron emitting device to represent information stored in the storage area (column 5, lines 8-22 – see especially lines 9 and 10); an emitter voltage to an electron emitter in the electron emitting device, wherein a current amplitude is established (column 2, lines 10-14). Gibson does not disclose supplying a non-inverted output voltage, sensing the emitter voltage, or providing an amplifier output voltage.

Pfeiffer '305 incorporates by reference, Pfeiffer et al. (Pfeiffer '271 – US Pat. No. 3,894,271).

Pfeiffer '305 discloses a method for controlling the voltage on an alignment yoke (see Pfeiffer '271 Figure 2, element 15 – read as a lens) of an electron emitting device, comprising: supplying an emitter voltage to an electron emitter (see column 3, lines 39-46 – supplying a voltage to the source is inherent to the source, as the source is emitting electrons. Applying a voltage through the described filament to excite the electrons is a fundamental way to excite the electrons); sensing the emitter voltage on the electron emitter (sensing plates – column 5, lines 58-66); supplying a non-inverted input voltage to an amplifier that follows the emitter voltage (implemented in Pfeiffer '305, but shown in Pfeiffer '271 – for circuit, see Pfeiffer '271 - Figure 4, elements 34 and 43); and providing an amplifier output voltage from the amplifier to the alignment yoke (see Pfeiffer '271 Figure 2, element 15 – read as a lens), wherein the amplifier output voltage corresponds to the emitter voltage at the electron emitter (see column 6, lines 51-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron emitter storage device as disclosed by Gibson with the electron emitter as disclosed by Pfeiffer '305, the motivation being to create an electron emitter with greater aiming capability for use in recording on a storage medium.

Regarding claim 2, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above. Pfeiffer '305 further discloses that other

lenses (column 4, lines 1-22) are driven in the emitting device based on the amplifier output voltage supplied by the amplifier (column 6, lines 51-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with lenses controlled by the amplifier output voltage as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 3, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above Gibson further discloses that the output voltage causes the lens to optimize the focal point of a beam emitted from the electron emitter relative to the storage area (column 3, lines 17-20).

Regarding claim 4, Gibson and Pfeiffer '305 disclose all of the limitations of claim 3 as discussed in the claim 3 rejection above. Pfeiffer '305 further discloses that amplifier output voltage is adjusted by varying the gain of the amplifier (see Pfeiffer '271 - Figure 4, element 43 – the gain of amplifier is determined by the input of element 34, and therefore the output is varied by the input).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the amplifier output voltage being adjusted by varying the amplifier gain as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 5, Gibson and Pfeiffer '305 disclose all of the limitations of claim 4 as discussed in the claim 4 rejection above. Pfeiffer '305 further discloses that the gain is varied by a variable resistor coupled to the amplifier (see 'potentiometer' – column 6, line 53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the amplifier gain being adjusted by a variable resistor as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 6, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above. Pfeiffer '305 further discloses that the sensing is performed by a sensing diode (the sensing plate is acting as a sensor for the current/voltage of the beam from the emitter, and thusly is performing the same function).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the sensing plate as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 7, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above. Pfeiffer '305 further discloses that the sensing is performed by an electric switch (the sensing plate is acting as a sensor for

the current/voltage of the beam from the emitter, and thusly is functioning in the same fashion as an electric switch. See Pfeiffer '271 - Figure 2, elements 32, 34, and 35 – the electrons interact between layers 32 and 34 which are separated by an insulating layer 35, and thus the configuration acts as a switch).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the sensing plate as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 8, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above. Pfeiffer '305 further discloses that the sensing is performed by one or more high-breakdown voltage MOS transistors (the sensing plate is acting as a sensor for the current/voltage of the beam from the emitter, and thusly is performing the same function).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the sensing plate as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 10, Gibson discloses a storage medium comprising: an electron emitter (Figure 1); a storage medium having a storage area (column 5, lines 8-22), a structural state of the storage area being alterable by a beam of electrons emitted by

the electron emitting device to represent information stored in the storage area (column 5, lines 8-22 – see especially lines 9 and 10). Gibson does not disclose a sensing switch, a lens, or an amplifier coupled to the sensing switch.

Pfeiffer '305 discloses an electron emitter with a lens to adjust the focal point of the beam of electrons emitted from the electron emitter (column 4, lines 23-27); a sensing switch coupled to the electron emitter to sense voltage on the electron emitter (see 'sensing plate 36' – column 5, lines 58-66); an amplifier coupled to the sensing switch that follows the voltage on the electron emitter, wherein the sensing switch is coupled to an input of the amplifier and the output of the amplifier is coupled to the lens; and wherein the output of the amplifier drives the voltage on the lens (see Pfeiffer '271 - Figure 5 elements 34 and 37 as incorporated by reference).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the storage unit and electron emitter as disclosed by Gibson with the electron emitter as disclosed by Pfeiffer '305, the motivation being to create an electron emitter with greater aiming capability for use in recording on a storage medium.

Regarding claim 11, Gibson and Pfeiffer '305 disclose all of the limitations of claim 10 as discussed in the claim 10 rejection above. Pfeiffer '305 further discloses that a variable resistor is coupled to an input of the amplifier, wherein the gain of the amplifier is adjusted according to the variable resistor (see 'potentiometer' – column 6, line 53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the amplifier gain being adjusted by a variable resistor as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 12, Gibson and Pfeiffer '305 disclose all of the limitations of claim 10 as discussed in the claim 10 rejection above. Pfeiffer '305 further discloses that the sensing switch is a sensing diode (the sensing plate is acting as a sensor for the current/voltage of the beam from the emitter, and thusly is performing the same function).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the sensing plate as disclosed by Pfeiffer '305, the motivation being to more accurately control the lenses for better aiming of the electron beam on the storage medium.

Regarding claim 15, Gibson and Pfeiffer '305 disclose all of the limitations of claim 10 as discussed in the claim 10 rejection above. Pfeiffer '305 further discloses that an emitter current switch (see column 4, lines 45-50); and a current control circuit (shown in Pfeiffer '271 - Figure 2, element 39) coupled to the sensing switch ('sensing plate 36' - column 5, lines 58-66), emitter current control switch (column 4, lines 45-50), and the variable resistor ('potentiometer 44' – column 6, line 52), wherein the current

control circuit establishes the current amplitude supplied to the electron emitter (see column 4, lines 39-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron storage device as disclosed by Gibson with the electron emitter with the emitter current switch, current control circuit as disclosed by Pfeiffer '305, the motivation being to more accurately control the electron beam for the purposes of storing a higher density of information on the storage medium.

Regarding claim 16, Gibson discloses an electron emitting storage device, comprising: emitter means for emitting electrons (Figure 1); storage means for storing information, the storage means exhibiting a structural state that is selectively alterable by electrons emitted by the emitter means (column 5, lines 8-22 – see especially lines 9 and 10). Gibson does not disclose the voltage sensor, a lens, or an amplifier.

Pfeiffer '305 discloses an electron emitter, comprising: a lens means for focusing emitted electrons from the emitter means into an optimized focal point on the storage means (column 4, lines 23-27); means for sensing voltage applied to the emitter means (sensing plates – column 5, lines 58-66); amplifier means for providing an output voltage to the lens means that is relative to the voltage applied to the emitter means (implemented in Pfeiffer '305, but shown in Pfeiffer '271, see Pfeiffer '271 - Figure 4, elements 34 and 43); and means for adjusting input voltage to the amplifier means so that the output voltage to the lens means changes (column 6, lines 51-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the storage unit and electron emitter as disclosed by

Gibson with the electron emitter as disclosed by Pfeiffer '305, the motivation being to create an electron emitter with greater aiming capability for use in recording on a storage medium.

Regarding claim 17, Gibson and Pfeiffer '305 disclose all of the limitations of claim 16 as discussed in the claim 16 rejection above. Pfeiffer '305 further discloses that means for controlling the current in the emitter means (aperture 27 – see column 5, lines 61-66); and switching means for activating the emitter means (shown in Pfeiffer '271, see Pfeiffer '271 - Figure 2, element 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the storage unit and electron emitter as disclosed by Gibson with the electron emitter with current control means as disclosed by Pfeiffer '305, the motivation being to create an electron emitter with greater aiming capability for use in recording on a storage medium.

Regarding claim 21, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above Gibson further discloses that the storage medium has additional storage areas (see abstract); and the method further comprising using the emitting device to alter a structural state of at least one of the additional storage areas (column 5, lines 8-22 – see especially lines 9 and 10).

Regarding claim 22, Gibson and Pfeiffer '305 disclose all of the limitations of claim 21 as discussed in the claim 21 rejection above Gibson further discloses that the method further comprises moving the storage medium and the electron emitting device relative to each other such that the electron emitting device is aligned to alter a

structural state of at least one of the additional storage areas (column 5, lines 8-22 – see especially lines 9 and 10).

4. Claims 9, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al. (hereinafter Gibson – US Pat. No. 5,557,596) in view of Pfeiffer (hereinafter Pfeiffer '305 - US Pat. No. 4,423,305) and further in view of Notte, IV (Notte – US Pat No. 6,515,287 B2).

Regarding claim 9, Gibson and Pfeiffer '305 disclose all of the limitations of claim 1 as discussed in the claim 1 rejection above. Neither Gibson nor Pfeiffer '305 disclose a non-inverting summer circuit.

Notte discloses a magnetic lens which can be used to alter the direction of a charged particle beam with an non-inverting op amp (Figure 5, element 108) that sums the emitter voltage (sensed from the magnetic field using elements 98 and 104) and the lens voltage (106).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the beam emitter and storage device as disclosed by the combination of Gibson and Pfeiffer '305 with the magnetic lens and amplifier circuit as disclosed Notte, the motivation being to more accurately control the direction of the electron beam on the storage area.

Regarding claim 18, Gibson and Pfeiffer '305 disclose all of the limitations of claim 16 as discussed in the claim 16 rejection above. Neither Gibson nor Pfeiffer '305 disclose a non-inverting amplifier.

Notte discloses a magnetic lens which can be used to alter the direction of a charged particle beam with an non-inverting op amp (Figure 5, element 108) that sums the emitter voltage (sensed from the magnetic field using elements 98 and 104) and the lens voltage (106).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the beam emitter and storage device as disclosed by the combination of Gibson and Pfeiffer '305 with the magnetic lens and amplifier circuit as disclosed Notte, the motivation being to more accurately control the direction of the electron beam on the storage area.

Regarding claim 19, Gibson discloses a method for controlling the voltage on a lens of an electron emitting device, the method comprising: supplying an emitter voltage to an electron emitter in the electron emitting device (see Figure 1); and providing a storage medium having a storage area (column 5, lines 8-22), a structural state of the storage area being alterable by a beam of electrons emitted by the electron emitting device to represent information stored in the storage area (column 5, lines 8-22 – see especially lines 9 and 10). Gibson does not disclose sensing the voltage or summing the sensed lens voltages.

Pfeiffer '305 discloses sensing the emitter voltage on the electron emitter (sensing plates – column 5, lines 58-66).

Notte discloses a magnetic lens which can be used to alter the direction of a charged particle beam in which the sensed voltage and the lens voltage are summed

(see Figure 5, elements 98, 104, 106, and 108). The op amp cited above output this signal (see output of element 108).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron beam emitter as disclosed by Gibson with the voltage sensing on the electron emitter as disclosed by Pfeiffer '305 and the magnetic lens and amplifier circuit as disclosed Notte, the motivation being in order to obtain a more accurate method of control while controlling the electron beam.

Regarding claim 20, Gibson, Pfeiffer '305, and Notte disclose all of the limitations of claim 19 as discussed in the claim 19 rejection above. Pfeiffer '305 further discloses driving other lenses (column 4, lines 23-38) in the emitting device based on the provided voltage output (column 6, lines 51-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the electron beam emitter as disclosed by Gibson with the lenses on the electron emitter as disclosed by Pfeiffer '305 and the amplifier circuit as disclosed Notte, the motivation being in order to obtain a more accurate method of control while controlling the electron beam.

Allowable Subject Matter

5. Claims 13 and 14 are allowed for reasons cited in the previous Office Action, mailed on 4/4/2005.

Response to Arguments

6. Applicant's arguments with respect to claims 1-12 and 15-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam R. Giesy whose telephone number is (571) 272-7555. The examiner can normally be reached on 8:00am- 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARG 11/8/2005

ARG

W. R. YOUNG
PRIMARY EXAMINER